

Pat.Appl.Nr. 09/ 241,744

Docket 406-01US

Amended Claims,

submitted July 2004, responsive to O/A of 05 April 2004

Claims now amended: 6,16,17,27-29

Claims now cancelled: (none)

New claims now added: (none)

Claims now standing in this application: 1-6,16-20,26-31

being seventeen claims in aggregate, of which claims 1,16,27 are independent.

Claim 1 (previously presented). An apparatus for in-ground fluid sampling comprising a flexible tube of unitary construction having a plurality of longitudinal chambers, at least one of the longitudinal chambers having an aperture for admitting the fluid into the at least one longitudinal chamber.

Claim 2 (previously presented). The apparatus of claim 1 wherein the flexible tube further comprises a continuous extruded column.

Claim 3 (previously presented). The apparatus of claim 1 wherein the flexible tube further comprises a non-jointed column.

Claim 4 (previously presented). The apparatus of claim 1 wherein the flexible tube further comprises a flexible polymeric material.

Claim 5 (previously presented). The apparatus of claim 1 wherein the flexible tube further comprises a cylindrical outer surface.

Claim 6 (currently amended). The apparatus of claim 1 wherein the [plural] longitudinal chambers are coextensive with the flexible tube.

Claims 7-15 (cancelled).

Claim 16 (currently amended). A method of obtaining data from depth discrete fluids disposed in an in-ground hole comprising the steps of:
installing a flexible tube of unitary construction in the in-ground hole, the flexible tube including a plurality of longitudinal chambers, at least one of the longitudinal chambers having an aperture for admitting the fluid into the at least one longitudinal chamber;
and collecting the data.

Claim 17 (currently amended). The method of claim 16 further comprising the steps of:
determining a sampling depth; and
creating [an] the said aperture in the flexible tube to correspond with the sampling depth upon installation of the flexible tube.

Claim 18 (previously presented). The method of claim 16 further comprising the step of spacedly attaching at least one packer to the flexible tube.

Claim 19 (previously presented). The method of claim 16 further comprising the step of attaching a filter over the aperture.

Claim 20 (previously presented). The method of claim 16 wherein the step of collecting the data further comprises inserting a down-hole instrument in at least one of the plurality of longitudinal chambers.

Claims 21-25 (cancelled).

Claim 26 (previously presented). The method of claim 16 wherein the step of collecting the data further comprises collecting a physical sample of the fluid from at least one of the longitudinal chambers.

Claim 27 (currently amended). Apparatus for taking a sample from a borehole, wherein:
the apparatus includes a length of continuous multi-channel (C-M-C) tubing;
the C-M-C tubing is an extrusion in a plastic material, having an extruded profile;
the length of C-M-C tubing is one single unitary continuous length of extruded plastic;
the length of C-M-C tubing fits lengthwise down the borehole, from a support at the surface, to a depth D of the borehole;
the profile of the C-M-C tubing includes an outer wall, which encloses a hollow interior;

the profile includes dividing walls, which separate the hollow interior into N cavities;
over the length of C-M-C tubing, the N cavities of the profile define N longitudinal channels;
the apparatus includes a sampling port P1, which is located, when the length of C-M-C tubing is in the borehole, at a depth D1 of the borehole;
the sampling port P1 comprises an opening in the outer wall of the C-M-C tubing, into channel N1 of the N channels;
the sampling port P1 is so structured that a sample of liquid, from the borehole, outside the C-M-C tubing, at the depth D1, can pass through into the channel N1;
the C-M-C tubing is flexible enough that the C-M-C tubing can be wrapped in a coil of diameter C; the diameter C is small enough that the single unitary continuous length of the C-M-C tubing, so coiled, is transportable to the borehole site;
the dividing walls are sufficient in number and robustness as to mechanically brace the profile of the C-M-C tubing when the length of C-M-C tubing is coiled to the diameter C; and
the C-M-C tubing is of such structure that, having been coiled to the diameter C for transport, the single unitary continuous length can be uncoiled, and fed down into the borehole, from the surface.

Claim 28 (currently amended). Apparatus of claim 27, wherein:

the apparatus includes a sampling port P2, which is located, when the C-M-C tubing is in the borehole, at a depth D2 of the borehole;
the sampling port P2 comprises an opening in the outer wall of the C-M-C tubing, into channel N2 of the N channels;
the sampling port P2 is so structured that a sample of liquid, from the borehole, outside the C-M-C tubing, at the depth D2, can pass through into the channel N2;
the sampling port P1 is separated vertically from the sample port P2, along the length of C-M-C tubing; and
the apparatus includes a packer, which fits annularly between the C-M-C tubing and the wall of the borehole, and is effective to isolate the sampling port P1 at depth D1 from the sampling port P2 at depth D2;
whereby samples can be drawn independently from the two depths D1 and D2.

Claim 29 (currently amended). Apparatus of claim 27, wherein:

the outer wall of the C-M-C tubing is formed as a right cylinder; and
the profile includes a central hub, and the dividing walls are arranged as spokes, emanating substantially radially from the central hub to the outer wall;

whereby the cavities are formed between the spokes, and are sector-shaped.

Claim 30 (previously presented). Apparatus of claim 29, wherein, in the profile, the spokes are radial, straight, and of constant thickness, between the central hub and the outer wall.

Claim 31 (previously presented). Apparatus of claim 29, wherein:
the central hub is hollow in profile, defining a central cavity;
and the spokes are six in number, whereby the profile includes, with the central cavity, a total of seven cavities.

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Amendment to paragraph starting line 4 of page 6.
submitted July 2004.

Well stock 102 is preferably an extruded, medium-density, flexible polyethylene. Flexibility allows the well stock to be coiled on a spool and uncoiled into a well. Use of polyethylene for the well stock also creates a smooth outer surface, which can simplify coiling, storage and deployment of the well stock. At least in the case of the smaller sizes of well stock 102, several hundred feet of well stock can be coiled into a roughly 5' diameter coil, which can be easily unwound into a borehole. Coiling the stock also greatly simplifies well stock storage and transportation. the diameter of the well stock and the shape and number of longitudinal chambers can be varied to suit circumstances.